REMARKS

Claims 1-17 are pending in the application. Claims 1-3, 7, 14 and 15 are rejected. Claims 4-6, 8-13, 16 and 17 are allowable. All rejections and objections are respectfully traversed.

The invention summarizes a compressed video. Audio peaks are detected in an audio signal of the video. Motion activity in the video is quantized as a continuous stream of pulses and the audio peaks are correlated with the stream of quantized pulses to identify uninteresting events and interesting events in the video to summarize the video.

Claims 1 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Divakaran et al. (6,763,069 – "Divakaran").

Divakaran operates on audio lables in the digital domain. The invention operates on audio signals in the analog domain. Divakaran cannot anticipate the invention. Processing analog signals is unrelated to processing digital signals.

Divakaran extracts high-level features from a video including a sequence of frames. First, low-level features are extracted from each frame of the video. Each frame of the video is then labeled digitally according to the extracted low-level features to generate sequences of labels. Each sequence of labels is associated with one of the extracted low-level features. The sequences of labels are analyzed using learning machine learning techniques to extract high-level features of the video

Divakaran extracts low-level features form a video, such as color features, motion features, and audio features. Frames of the video are labeled according to the extracted features.

Claimed is detecting audio peaks in an analog audio signal of the video, see the 44 KHz audio signal and 1 KHz volume contour in Figure 1. A person of ordinary skill in the art would readily understand that extracting audio features for digital labels, such as 'loud' is a different operation than detecting analog audio peaks. Item 203 of Divakaran shows digital ***labels*** (Quiet, Noisy, and Loud) for a sequence of audio frames. Those digital labels do not indicate analog ***peaks*** in the audio signal as claimed. It appears that the Examiner is confusing "Loud" labels with peaks in analog audio signal magnitude. Divakaran never detects audio peaks in an audio signal as claimed.

The invention quantizes motion activity in the video as a continuous stream of pulses. The Examiner's entire rejection of this element is "(202)," without any further explanation.

MPEP 2131 explicitly states that in order to anticipate a claim, each and every element as set forth in the claims must be found in the prior art reference. The identical invention must be shown in as complete detail as is contained in the claim. Item 202 in Figure 2 of Divakaran only shows label values based on motion. The Examiner is requested to specifically point out which words in Divakaran mean quantize, quantize motion activity, pulse, or continuous stream of pulses. In fact, none of these words appear in Divakaran. The Examiner's rejection ignores explicit limitations recited in the claims.

So far, Divakaran fails to teach, suggest, describe or show detecting audio peaks, or quantizing motion activity as a continuous stream of pulses. The invention correlates the audio peaks with the stream of quantized pulses to identify uninteresting events and interesting events in the video to summarize the video.

The examiner points to Figure 1 and col. 5, lines 31-57 of Divakaran, without further explanation.

FIG. **2** shows a sequence of frames (1–N) **101**, and three labels sequences **201**, **202**, and **203**. The label values (Red, Green, and Blue) of the sequence **201** are based on color features, the label values, Medium, and Fast) of the sequence **202** are based on motion features, and the label values (Noisy, Loud) of the sequence **203** are audio features. Note that in this example, the boundaries of clusters of labels are not always time aligned. The manner in which the labeling coincides or transitions can be indicate of different semantic meanings. For example, when there is a long pan, there might be an apparent scene change during the panning so that the color changes but motion does not. Also when an object in the scene changes motion suddenly, there may be motion change without color change. Similarly, the audio labels can remain constant while the color labels change. For example, in a football video, slow motion followed by fast motion on a green field, followed by a pan of a flesh colored scene accompanied by loud noise can be classified as a "scoring" event.

Note, our clustering according to sequences of labels is quite different than the prior art segmentation of a video into shots. Our clusters are according different labels, the boundaries of clusters with different labels may not be time aligned. This is not case in traditional video segmentation. We analyze not only label boundaries per se, but also the time aligned relationship among the various labels, and the transitional relations of the labels.

The Examiner is requested to specify exactly which words above means correlate audio peaks with the stream of quantized pulses to identify uninteresting events and interesting events in the video to summarize the video. Divakaran clusters frames according to sequences of labels. The invention correlates audio peaks with quantized pulses of motion activity.

It would be readily apparent to a person of ordinary skill in the art that Divakaran fails to describe any of the elements of what is claimed. Divakaran can never anticipate what is claimed. Therefore, the applicants respectfully request the Examiner reconsider and withdraw his rejection of claims 1 and 14 based on Divakaran.

Claims 2, 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Divakaran et al. (6,763,069).

In claims 2 and 15, frames of the video associated with the uninteresting events are discarded and frames of the video associated with the interesting events to form a summary of the video are concatenated. Divakaran clusters frames according to sequences of labels associated with low-level features, see col. 5, lines 50-57. The invention associates frames of the video with interesting or uninteresting events based on audio peaks correlated with a stream of quantized pulses of motion activity. There is absolutely nothing in Divakaran that suggests what is claimed. Divakaran cannot make the invention obvious.

Regarding claim 7, the Examiner takes official notice that measuring an average of motion vectors of P-frame to extract motion activity is well known in the art. However, the Examiner has failed to produce any prior art reference that describes the novel *correlating of audio peaks with the stream of quantized pulses* to identify uninteresting events and interesting events in the video to summarize the video as claimed. The Examiner's official notice *motion vector extraction* lacks any context related to the invention, and is irrelevant to what is claimed.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Divakaran et al. (6,763,069) in view of Hinderks (6,339,756 B1).

Hinderks fails to cure the defects of Divakaran. Hinderks describes a programmable CODEC for compression and decompression of audio signals. The Examiner's use of Hinderks as a reference appears to be the result of a keyword search only. Hinderks' CODEC has nothing to do with either the invention or Divakaran. Hinderks describes processes for compressing an audio signal. In particular, the Examiner points to col. 23, lines 11-19, which describe a process for allocating bits to a quantizer to reduce noise in the compressed audio signal; see Figure 28. The cited section is so far removed from anything concerning the invention the applicants have no idea what point the Examiner is trying to make. The Examiner is requested to explain exactly why a quantizer bit allocation process for reducing noise in an audio signal CODEC has anything to do with *correlating detected audio peaks with the stream of quantized pulses* to identify uninteresting events and interesting events in the video to summarize the video as claimed.

All rejections have been complied with, and applicant respectfully submits that the application is now in condition for allowance. The applicant urges the Examiner to contact the applicant's attorney at the phone and address indicated below if assistance is required to move the present application to allowance.

Please charge any shortages in fees in connection with this filing to Deposit Account 50-0749.

Respectfully Submitted,

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